August-27-12 10:25:54 AM

Item ID:

D407-667-205

Accept

N900040100

Setup Start

Revision ID:

Start Date:

Crosstube Aft Item Name:

> 14/05/2012 Start Qty: 1.00

Cust Item ID:

Required Date: 31/05/2012

Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan: MJ

Date: 12/08/27 Tooling:

Date:

Run

QC:

Date:_____ SPC (Y/N): Date:

Stop

Sequence ID/ **Work Center ID** Operation Description Set Up/ **Run Hours** Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

12-10-25

Reject Insp. Number Stamp

MUS 12-11-13

Draw Nbr

Revision Nbr

D407-667-245 Rev F/DEO

0.00

100 DC

Document Control

DOCUMENT CONTROL

Memo

0.00

Photocopy bluefile and create labels as per PPP D407-667-205 CHG097

008

110

110

Packaging Packaging

Pick Kit

Packaging

0.00

0.00

Memo

BENDING MACHINE - CROSSTUBES

CNC Bend 1

0.00

0.00

CNC Delta 100 Bender

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and

Folio 21

120 *120*

												DQA:	Da	ite:	
NCR:	Yes	/ No				WORK ORDER NON-C	10:	NFORM	MANCE / UP	DATE	(- QA Closed:		ite:	4,
Work Ord	or.					DISPOSITION				AGAINST D		-			
Part I	No.					Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite				Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier			Engineering Quality Other
Root					Descri	ption of work order update	I	nitial	Act	tion	T	Sign &			
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription		Date	Verificatio	'n	QC Inspector
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		Bending				Bend		Grain		Γ	\neg	Ovalized			Pressure/Forced
	П	Centre No	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		7,	Over/Under	tolerance		Temperature/Cure
	Г	Cracks		•		Broken/Damaged		Inspecti	on Incomplete		_	Part Incorred			Weld
	Crushed/Crimped					Burrs		i '	ions Incomplete/	Unclear	-1	Part Lost/Mi			Wrong Stock Pulled

Maintenance

Out of Calibration

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Part Moved

Positioned Wrong

Power Loss/Surge

Other

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Cuffs

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

84488

Page 2

August-27-12 10:25:54 AM

Item ID:

D407-667-205

Accept

N900040100

Setup Start

Revision ID:

Start Date:

Crosstube Aft Item Name:

Required Date: 31/05/2012

14/05/2012

Start Qty: 1.00 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan:

Date: _____

Tooling:

Date:

Start Run

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/ **Work Center ID** Operation Description

Set Up/ **Run Hours** Tool ID

Tool # Plan

Accept Code Qty

Reject Qty

Reject Insp.

130

Memo

QC15- Crosstube Dimensional Check

130

Quality Control

0.00

Number Stamp

en Lista de la Sala Sandan en 1944		~					•			DQA:	Date:	
NCR:	Yes	/ No			•	WORK ORDER NON-	CONFO	RMANCE / U	PDATE	QA Closed:	Date:	
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NCR I	No.			· · ·	· ·	Work Order Update] '''	Large Fab	Composite	- Necyston	Supplier	
Root					Descri	ption of work order update	Initial	Α	Action	Sign &		
Cause '		Date	Step	Qty	(or Non-conformance	Chief E	ng Des	scription	Date	Verification	† ČQC Inspector
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,	$\vdash\vdash$	Heat Trea		4 Tulaa	<u> </u>	Countersink		beled		Positioned V		704
	Inspection Strip in Tube					Cut Too Short	Misr	At the second		Power Loss/	Surge	Other
	1 1	Ripples in	Rend .		1	Drill Holes	Offse	et 🤲 - 관실	19. A			

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

ork Order ID 84488

Crosstubes

Crosstubes

84488

August-27-12	10:25:54 AM					
Item ID: Revision ID:	D407-667-20	05	•	Accept	*N900040100*	Setu
Item Name:	Crosstube Aft	ý.				
Start Date:	14/05/2012	Start Qty: 4.00	*1*		Cust Item ID:	
Required Date	e: 31/05/2012	Req'd Qty: 1.00	*1*		Customer:	

Approvals:	Process Plan:	Date:	Tooling: SPC (Y/N):		ate:		R	Run Sta	^ N	R1*
Sequence ID/ Work Center II	Operation Description		Set Up/ Run Hours	Tool ID Tool # Plar Cod			Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Crosstubes									

0.00 Memo ****** ENSURE PROPER JIG POSITIONING ********

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9- Scribe tube to identify on the inner chamfer in the cuff D# and B#

12/10/29

		DQA:	Date:	
NCR· Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE			•

											QA Closed:	Date	
Work Ord	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part f	 No					Rework Scrap Use-as-is Work Order Update		۸ herm	Skid-tube Machining oforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root			· · · · · · · · · · · · · · · · · · ·		Descri	ption of work order update	Init	ial	Ac	tion	Sign &		*
Cause		Date	Step	Qty		or Non-conformance	Chief	Eng	Desc	cription	Date	Verification	QC Inspector
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Unapproved			<u> </u>	<u> </u>	7		AULT (CATE	ORY		I	<u>L</u>	1
Landi	ng Ge	ar	···································			General		·····		· ·			
	Landing Gear Bending Centre Not Concentric to O/S Cracks				o/s	Bend BOM/Route Broken/Damaged	На	Grain Hardware Inspection Incomplete			Ovalized Over/Under tolerance Part Incorrect		Pressure/Forced Temperature/Cure Weld
	\Box c	uffs	Crimped.			Burrs Contamination	М	lainte	ons Incomplete, nance	/Unclear	Part Lost/M Part Moved		Wrong Stock Pulled
	□ır	eat Treanspection	n Strip in	Tube		Countersink Cut Too Short Drill Holes	М	islabel isread ffcot			Positioned \ Power Loss/		Other
	∏T₁	orque W	aves in E			Drawing	Offset Out of Calibration						
	Turning Sequence Wave/Twist in Tube			Finish Folio	Out of Sequence Outside Dimensions				No. 100 Control Control				

August-27-12 10:25:54 AM Item ID: D407-667-205 Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** 14/05/2012 Start Qty: 1.00 Cust Item ID: **Required Date:** 31/05/2012 Reg'd Qty: 1.00 **Customer:** Reference: Run Process Plan: Date: Tooling: Approvals: Date: Stop QC: _____ Date: ____ SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Reject Accept Reject Insp. Work Center ID Description **Run Hours** Qty Qty Number Stamp Code 10-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245 150 QC5- Inspect part completeness to step on W/O *150* QC Memo Quality Control *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 160 0.00

160

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1- CLEAN CROSSTUBE WITH WASH'N WIPE

										DQA:	Date	e: <u> </u>
NCR: Y	es / No				WORK ORDER NON-	100	NFORM	AANCE / UPI	DATE	QA Closed:	Date	ş
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NCR N	lo				Work Order Update			Large Fab	Composite		Supplier	
Root				Descri	ption of work order update	\Box	nitial	Act	tion	Sign &		
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Landi	ng Gear				General	_	,		_	_	_	 -
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	Centre Not Concentric to O/S			o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				Broken/Damaged	_	Inspecti	ion Incomplete		Part Incorre	ct	Weld
	Crushed/Crimped			Burrs	L	-1	ions Incomplete/	Unclear	Part Lost/M		Wrong Stock Pulled	
	Cuffs				Contamination		Mainte	nance		Part Moved		
	Heat Trea	at			Countersink	L	Mislabe	led		Positioned '		
	Inspectio	n Strip in	Tube		Cut Too Short	L	Misread	i		Power Loss,	/Surge	Other
	Ripples in Bend				Drill Holes		Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-27-12 10:25:54 AM Item ID: D407-667-205 Accept *N900040100* Setup Start **Revision ID:** Crosstube Aft Item Name: **Start Date:** 14/05/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 31/05/2012 Reg'd Otv: 1.00 **Customer:** Reference: Run Process Plan: Date: **Approvals:** Tooling: Date: Stop Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool# Plan Accept Reject Reject Insp. Work Center ID Description Qty Qty **Run Hours** Code Number Stamp 180 Outsource process - NDT per QSI038 4.1 0.00 *180* Outsource2 0.00 Memo Outsource process - NDT *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038O Issue P/O: 1830 2-PI-as per ASTM 1417 Level 2 Attach copy of NDT results to work order 190 0.00 Reply (1)

190

Packaging

Packaging Packaging

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Ensure copy of NDT results attached to work order.

200

QC5- Inspect part completeness to step on W/O

0.00

200

Memo

0.00

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

NCR: Y	/es	/ No	., 5 &			WORK ORDER NON-CONFORMANCE / UPDATE				QA Closed:	Date:		
Work Orde	ar.				W	DISPOSITION				AGAINST DE	PARTMENT,	PROCESS	
Part N	- . No.					Rework Skid-tube Crosstube Scrap Machining Small Fab Use-as-is Thermoforming Finishing Work Order Update Large Fab Composite			Small Fab Finishing	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other	
Root					Descri	ption of work order update	Ī	nitial	Action		Sign &		
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Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved						·							
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Landi	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend Torque Waves in Extrusion Turning Sequence				General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing Finish		Instruct Mainte Mislabe Misrea Offset Out of	ion Incomplete tions Incomplete/ enance eled	Unclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other	

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-27-12 10:25:54 AM Item ID: D407-667-205 **Revision ID:** Item Name: Crosstube Aft **Start Date:** Start Qty: 1.00 14/05/2012 **Required Date:** 31/05/2012 Reg'd Oty: 1.00

Accept

Cust Item ID: Customer:

N900040100

Reference:

Run Process Plan: Approvals: Date: _____ Tooling: Date: Stop Date: SPC (Y/N): Date: Operation Sequence ID/ Set Up/ **Tool ID** Tool # Plan Reject Accept Reject Insp. **Work Center ID Description Run Hours** Code Qty Qty Stamp Number 204 0.00 *204* HandFXtube 0.00 Memo Hand Finishing Crosstubes *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION

206 *206*

QC7-Inspect Chemical Conversion Coat

0.00

Quality Control

Memo

0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

Setup Start

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Part N	NΩ					Scrap			Machining	Small Fab	1	Prod	d. Eng. Coor.	\exists	Quality
	•					Use-as-is	1	Thermoforming Finishing			Rec/Store/Packaging			\Box	Other
NCR N	No.					Work Order Update	1		Large Fab	Composite			Supplier		
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Bending Centre Not Concentric to O/S				0/5	BOM/Route	\vdash	Hardwa	ro	<u> </u> -		Over/Under	tolerance		Temperature/Cure	
Centre Not Concentric to O/S Cracks				°'3 -	Broken/Damaged	\vdash	1	on Incomplete	-		Part Incorred			Weld	
Cracks Crushed/Crimped				-	Burrs	\vdash	1	ions Incomplete/U	Inclear	-	Part Lost/Mi			Wrong Stock Pulled	
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	-		ıt.		-	Countersink	\vdash	4		<u> </u>	-	Positioned V	Vrong		
	Heat Treat Inspection Strip in Tube			<u> </u>	Cut Too Short	₩ ₩				Power Loss/	=		Other		

Offset

Out of Calibration
Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

Work Order ID 84488 Page 7 August-27-12 10:25:54 AM Item ID: D407-667-205 Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** 14/05/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 31/05/2012 Req'd Qty: 1.00 **Customer:** Reference: Run Process Plan: Date: _____ Approvals: **Tooling:** Date: Stop OC: Date: SPC (Y/N): Date: Sequence ID/ Operation Reject Set Up/ Tool ID Tool # Plan Accept Reject Insp. **Work Center ID Description Run Hours** Code Qty Qty Number Stamp 210 0.00 SprayPaint *210* SprayPaint 0.00 Memo **Spray Painting** *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** ***Mask underside of crosstube as shown*** 1-Prime inside and outside crosstube as per DEO D407-667-245 and OSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: 122888 Start Time: 7:15 Fininsh Time: 8:00 Clear 122638 PAINT: 123307 Start Time: 6115 Finish Time: 7:00

220

QC14- Inspect Spray Paint

0.00

***?**?0

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

OAS 1 05

12-11-0

								DQA:	Date:	
NCR: Y	es / No			WORK ORDER NON-	CONFORI	MANCE / UI		QA Closed:	Date:	
Work Orde	r:			DISPOSITION			AGAINST DE	PARTMENT,	/PROCESS	
Part No. NCR No. Root Descri Cause Date Step Qty		Rework Scrap Use-as-is Work Order Update	I	Skid-tube Machining moforming Large Fab	Crosstube Small Fab Finishing Composite	Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering Quality Other		
Root				Description of work order update	Initial	Α	ction	Sign &		
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Process										
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· · · · ·			***		FAULT CATE	GORY				

Landing (Gear	General		_		_	 •
	Bending	Bend		Grain		Ovalized	Pressure/Forced
	Centre Not Concentric to O/S	BOM/Route		Hardware		Over/Under tolerance	Temperature/Cure
	Cracks	Broken/Damaged		Inspection Incomplete		Part Incorrect	Weld
	Crushed/Crimped	Burrs		Instructions Incomplete/Unclear		Part Lost/Missing	Wrong Stock Pulled
	Cuffs	Contamination		Maintenance		Part Moved	 _
	Heat Treat	Countersink		Mišlabeled		Positioned Wrong	_
	Inspection Strip in Tube	Cut Too Short		Misread	Г	Power Loss/Surge	Other
	Ripples in Bend	Drill Holes	Г	Offset		•	
	Torque Waves in Extrusion	Drawing		Out of Calibration			
	Turning Sequence	Finish		Out of Sequence			
	Wave/Twist in Tube	Folio		Outside Dimensions			

August-27-12 1	0:25:54 AM			044	FOO.						r age t
Item ID: Revision ID: Item Name:	D407-667-20 Crosstube Aft	05		Accept	*N900	040	100)* ፡	Setup Sta	1 7	S1*
Start Date: Required Date: Reference:	14/05/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item 1 Customer:	ID:				IN	5/
Approvals:	Process Pla	in:				ate:	 	I	Run Sta Sto	17	R1* R2*
Sequence ID/ Work Center II)	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230 Crosstubes Crosstubes		up. A/R Prose 2- Lightly s with 41058 3-Install su D407-667- A/R Sc	eal 890 Batch: 12316 EXP: 03/1 couff the bonded area using wash 'n' wipe pport with Scotch-Weld I 245 using installation jig cotch-Weld DP460 Batch EXP:	0.00 D407-667-245.Top holes slow 3 3 and a 320 grit sand paper and DP460 and install clamps as a DT9025. Torque clampsas	per DEO Dwg	d-11.0C (j)		O	Ø	. <u>A</u>
240 * 740 * QC Quality Control		QC5- Inspect part comp	leteness to step on W/O	0.00 (AS)	12/11/12						

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	-coi	VFORM	MANCE / UPD	ATE	•		•.
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Part f	No. _.					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	1	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Acti	on	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	nief Eng	Descri	ption	Date	Verification	QC Inspector
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		Cracks				Broken/Damaged		Inspecti	ion Incomplete		Part Incorre	ct	Weld
		Crushed/	Crimped.			Burrs		⊣	ions Incomplete/U	nclear	Part Lost/M	issing	Wrong Stock Pulled
	_	Cuffs	•			Contamination		Mainte	·		Part Moved	- L	_
	-	Heat Trea	at			Countersink		Mislabe			Positioned \	N rong	
	\vdash	Inspectio		Tube		Cut Too Short		Misread			Power Loss,		Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

August-27-12 10:25:54 AM

Item ID:

D407-667-205

Accept

N900040100

Setup Start

Revision ID:

Item Name: Crosstube Aft

Required Date: 31/05/2012

Start Date: 14/05/2012 Start Qty: 1.00 Reg'd Qty: 1.00

Date:

Cust Item ID:

Customer:

Tool ID

Reference:

Approvals:

Process Plan:

Date: Tooling:

Date:

Run

QC:

SPC (Y/N):

Date:

Stop

Sequence ID/ **Work Center ID** Operation Description Pick Kit

Set Up/ **Run Hours**

Tool#

Plan Accept Code Qty

Reject Qty Number

Reject Insp. Stamp

250

Packaging Packaging

250

Memo

0.00

0.00

260

260

Quality Control

Memo

QC4-100% Inspect kits for completeness

0.00

0.00

121113

270

270

Packaging

Packaging

Memo

0.00

0.00

Packaging

Identify and in kanban rack Location: 37

											DQA:	Date	2:	
NCR:	⁄es	/ No				WORK ORDER NON-	COI	NFORM	ANCE / UPD	ATE	•			
											QA Closed:	Date	<u>)</u> :	
Work Orde	or.					DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS		
WOIK OIG	-''-					Rework	٦		Skid-tube	Crosstube		Water Jet	Engi	ineering
Part N	۱o.					Scrap	1	i	Machining	Small Fab	Pro	d. Eng. Coor.		Quality
	•					Use-as-is		Therm	noforming	Finishing	Rec/Sto	re/Packaging		Other
NCR I	۱o. ₋					Work Order Update	_		Large Fab	Composite		Supplier		
Root		**			Descri	ption of work order update	Π	Initial	Actio	on	Sign &			
Cause		Date	Step	Qty		or Non-conformance	Ch	nief Eng	Descri	ption	Date	Verification	Q	C Inspector
Doc/Data														
Equip/Tooling														
Operator											ļ			
Material														
Setup							}					 		
Other													- [
Process														
Supplier														
Training							1							
Unapproved														
				***************************************			AUI	LT CATE	GORY				~	, ,
Landi	ng G	ìear				General	,	-			-	r		
	Ш	Bending			<u></u>	Bend		Grain			Ovalized	Ļ	Pressi	ure/Forced
		Centre No	ot Conce	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temp	erature/Cure
	Ш	Cracks			L.	Broken/Damaged	L	Inspecti	on Incomplete		Part Incorre	ct	Weld	
		Crushed/	Crimped			Burrs		Instruct	ions Incomplete/U	nclear	Part Lost/M	issing	Wron	g Stock Pulled
•		Cuffs				Contamination		Mainte	nance		Part Moved			
	$\lfloor \cdot \rfloor$	Heat Trea	it			Countersink		Mislabe	led		Positioned \	N rong		
		Inspectio	n Strip in	Tube		Cut Too Short		Misread	i		Power Loss,	/Surge	Other	<u> </u>
		Ripples in	Bend			Drill Holes		Offset		,				

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

August-27-12 10:25:54 AM Item ID: D407-667-205 Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Aft **Start Date:** 14/05/2012 Start Qty: 1.00 **Cust Item ID: Required Date:** 31/05/2012 Req'd Qty: 1.00 **Customer:** Reference: Run Date:_____ Approvals: Process Plan: Tooling: Date: Stop Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Insp. Work Center ID Description **Run Hours** Code Qty **Qty** Number Stamp 280 QC21- Final Inspection - Work Order Release 0.00 *280* mx 29 0.00 Memo Quality Control

											DQA:	Date:	;
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM	/ANCE / UP	DATE	QA Closed:	Date	
Work Orde	er·					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part I	- No					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	l	nitial	Ac	tion	Sign &		
Cause	ļ	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved								TCATE	CODY				
Landi						General F	AUL	T CATE	JURY				
Landi		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspection	Crimped it n Strip in i Bend	Tube		Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instruct Mainte Mislabe Misread Offset	ion Incomplete ions Incomplete/ enance eled	'Unciear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	j i	Torque W	raves in t	extrusio	n	Drawing	1	LOUT OF C	Laupration				

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish

Picklist Print

August-27-12 10:25:58 AM

Work Order ID: 84488

D407-667-205

84488

D407-667-205

Parent Item Name: Crosstube Aft

Start Date: 14/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

Parent Item:

IPP Rev:C 05.09.02 Add holes for compatibility with Bell SkidtubesKJ/JLM

IPP Rev:D Added Magnobond, Rubber Cushion & Clamps

JLM

****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR GREATER**** IPP Rev:E 08-05-22 add comment in seq. 6 and QC15 and QC5 DD verified

by:EC

IPP Rev:F 08-06-12 add comment in seq. 24 DD verified by:EC

IPP Rev:G 08-08-19 revE as per dwg DD verified by:EC

IPP Rev H 09.01.06 ECN 08-562 EC verified by:DD IPP Rev:I 10.04.07 revise route seq. in bom DD verified by:JLM IPP Rev J 11.04.26

removed abrasion strip ecn 11-551 EC verified

by:DD

IPP REV:K

11.10.03 DEO D407-667-245-F-2 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D407-667-205TRN		Manufactured	No		· - 	110	Each	1.0000	1	ط ۵			
D407-66 Crosstube Turning Detail	7-205TF	8N*							**	SAU	12	-10	r25
				Location		Loc (<u>Oty</u>	Loc Code					
AN960JD516	NAS1140D05621		N.T.	LG	86417		1 -	B89	•				
AN960.IF	NAS1149D0563J)516	Purchased	No			230	Each	2.0000	**	18 ~ 23355	JB =	12/11/	13
				Location		Loc (<u>Qty</u>	Loc Code					
				ST338			2						
					1069059		2						

											DQA:	Date:	;
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UP	DATE	QA Closed:	 Date:	
						DISPOSITION		,		AGAINST DE		Tritter.	
Work Orde	er: _					_	٦				1	,	n
Part N	۷o					Rework Scrap Use-as-is	-	Г	Skid-tube Machining noforming	Crosstube Small Fab Finishing	-{	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR I	No			.=		Work Order Update			Large Fab	Composite]	Supplier	
Root					Descri	ption of work order update		nitial	Ac ⁻	tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data		,											
Equip/Tooling	Щ												
Operator	\vdash						Ì						
Material	Щ												
Setup	Н						İ						
Other	Н												
Process	Н												
Supplier	Н				"								
Training	Н												
Unapproved			<u> </u>	l			- L	TCATE	CORY		<u> </u>	<u> </u>	1
1 1'						General	FAUI	LT CATE	GORY	•			
Landi						Bend	_	Grain			Ovalized	Г	Pressure/Forced
	-	Bending Centre No	at Canca	ntric to	0/5	BOM/Route		Hardwa	aro.	-	Over/Under	tolerance	Temperature/Cure
	-	Cracks	ot conce	iitiic to	^{5/3} -	Broken/Damaged	\vdash	4	ion Incomplete		Part Incorre		Weld
	⊢–	Crushed/	Crimned		-	Burrs	-	4 '	tions Incomplete/	'I Inclear	Part Lost/M		Wrong Stock Pulled
· -	-	Cuffs	ci ilipeu		-	Contamination		Mainte	•		Part Moved	_	
	$\boldsymbol{\vdash}$	Heat Trea	at		-	Countersink	\vdash	Mislabe			Positioned		-
		Inspectio		Tube		Cut Too Short	\vdash	Misread			Power Loss,		Other
	-	Ripples ir		, and	-	Drill Holes	十	Offset	-	<u> </u>	٦. ٥٥, ١٥٥٥,		1
	-	Torque W		xtrusio	n	Drawing		4	Calibration				

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish Folio August-27-12 10:25:58 AM

Work Order ID: 84488

Parent Item:

D407-667-205

Parent Item Name: Crosstube Aft

84488

Location

LG052

D407-667-205

Start Date: 14/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

D2873-043

D2873-043

Nut Plate Assembly

Manufactured

No

230

Each

48.0000

Loc Code

2

**

Al 12-11-8

D2873-045

D2873-045

Nut Plate Assembly

Manufactured

82949 84386

72644

40 230 Each

Loc Oty

2

6

Loc Qty

1.0000

**

Af 12-11-8

D2894-1

2.750 Support

Manufactured

Manufactured

No

Location

LG052

82947

89253

Each

8.0000

Loc Code

Loc Code

**

**

Af 12-11-8

D3190-1

D3190-1

Chafing Shield

LG052

Location

No

3 5 230 Each

23

10 10

Loc Qty

33.0000

Location Loc Qty Loc Code LG053 23

230

75947 LG055

(2)

											DQA:	Date:	·
NCR:	Yes	/ No				WORK ORDER NON-C	CON	NFORM	MANCE / UP	DATE	QA Closed:	Date:	
					-	DISPOSITION				AGAINST DE		*************************************	
Work Ord	er: _						,						
Part f	۷o	-				Rework Scrap Use-as-is		l	Skid-tube Machining noforming	Crosstube Small Fab Finishing	ł	Water Jet d. Eng. Coor. e/Packaging	Engineering Quality Other
NCR I	No					Work Order Update]		Large Fab	Composite		Supplier	
Root					Descri	ption of work order update	Ti	nitial	Ac	tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling								!					
Operator													
Material													
Setup			İ										
Other													
Process	Ш												
Supplier					1								
Training													
Unapproved .							<u> </u>						
						F	AUL	T CATE	GORY			· · · · · · · · · · · · · · · · · · ·	
Landi	$\overline{}$					General		1			7	,	¬
į	\vdash	Bending			<u> </u>	Bend	-	Grain			Ovalized	-	Pressure/Forced
	${}^{-}$	Centre No	ot Conce	ntric to	o/s	BOM/Route		Hardwa			Over/Under	<u> </u>	Temperature/Cure
		Cracks			<u></u>	Broken/Damaged	L	4 '	ion Incomplete	ļ	Part Incorre	<u> </u>	Weld
	-	Crushed/	Crimped			Burrs	<u></u>	-	tions Incomplete/	'Unclear	Part Lost/M	issing	Wrong Stock Pulled
	\vdash	Cuffs				Contamination		Mainte			Part Moved		
	\vdash	Heat Trea				Countersink		Mislabe		<u> </u>	Positioned \		_
	-	Inspectio	•	Tube		Cut Too Short		Misread	t	L	Power Loss,	'Surge	Other
	Ш	Ripples in	Bend			Drill Holes		Offset					
		Torque W	/aves in E	xtrusio	n .	Drawing	1	Out of	Calibration				

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Finish

August-27-12 10:25:58 AM

Work Order ID: 84488

D407-667-205

Parent Item Name: Crosstube Aft

84488

D407-667-205

Start Date: 14/05/2012

(2)

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Parent Item:

Manufactured

Purchased

No

230

Each

165.0895

Loc Code

**

A 12-11-8

D3595-063-450

RUBBER CUSHION

90968

Location Loc Qty LG 0.28 82511 0.28 LG051 154.7 80161 1.7 84715 3 87478 130 87958 20

MAT052 10.109474

67353 68893 70113 0.56 71354 0.2

74113 0.349474 75597

Each

230

190.0000 **

14

AB 12-11-8

MS20601-AD4W8

RIVET

MS20601-AD4W8

Loc Qty	Loc Code
45	
45	
33	
33	
101	
I	
100	
11	
11	
	45 45 33 33 101 1 100

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-O	CON	NFORM	/ANCE / UPI		QA Closed:	Date:	•
Work Orde	or.					DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS	
Part I	- No					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	ł	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	Ī	nitial	Act	tion	Sign &		
Cause		Date	Step	Qty		or Non-conformance	Ch	ief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved								TCATE	CODY				
							AUL	T CATE	GORY				
Landi		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspection	Crimped it n Strip in Bend	Tube		General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instruct Mainte Mislabe Misread Offset	ion Incomplete cions Incomplete/l enance eled d	Unclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned \ Power Loss/	ct sissing Nrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	│	Torque W	aves in E	xtrusio	n 「	Drawing		Out of	Calibration	•			

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-27-12 10:25:58 AM

Work Order ID: 84488

Parent Item:

D407-667-205

Parent Item Name: Crosstube Aft

84488

D407-667-205

Start Date: 14/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

MS21920-22

Clamp(per MIL-DTL-8783C)

Purchased

Purchased

No

No

230

Each

74.0000

**

Al 12-11-8

Location	Loc	<u>Qty</u>	Loc Code		
LG		1			_
119545		1			
LG050		73			
116207		7			
117506		1			
118186		8			
120631		7			
122518		50			(4)
	230	Each	72.0000	2	2

MS21920-25

MS21920-25

Clamp(per MIL-DTL-8783C)

122838

120920

122204

Location Loc Qty Loc Code LG050 72 116264 2 117998 118142 119339 119746 120475

46

5

**

(3)

August-27-12 10:25:58 AM

NCR: Y	es /	No			WORK ORDER NON-O	O	NFORM	MANCE / UPE	DATE		· · · · · · · · · · · · · · · · · · ·	
										QA Closed:	Date	
Work Orde	er:				 DISPOSITION	,	-	1	_	PARTMENT,		
Part N NCR N			•		 Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	-∤	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
					 h	1		<u> </u>	' L	<u>.</u>		
Root Cause		Date	Step	Qty	ption of work order update or Non-conformance	į.	nitial iief Eng	Acti Descri		Sign & Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved												
1 11						AUL	T CATE	GORY				
Landir	Be Ce Cri Cri Cu He Ins	nding ntre No acks ushed/C ffs at Trea pection	Strip in	Tube	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes Drawing		Instruct Mainte Mislabe Misread Offset	ion Incomplete ions Incomplete/U enance eled	Unclear	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Picklist Print

August-27-12 10:25:58 AM

Work Order ID: 84488

Parent Item:

D407-667-205

Parent Item Name: Crosstube Aft

84488 *D407-667-205*

Start Date: 14/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

10

AN5-10A

AN5-10A

AN5-32A

Each 397.0000

**

123533 20

10

Location	Lo	oc Qty	Loc Code			
ST337		297				
118191		80				
121243		100				
122151		117				
ST362		100				
122800		100				
	250	Each	301.0000	4	4	,

AN5-32A

Purchased

Purchased

No

No

**

Loc Qty	Loc Code
100	
50	
50	
101	
5	
96	
100	
100	
	100 50 50 101 5 96 100

250

AN5-34A

Bolt

Purchased

No

250 Each

90.0000

**

Locatio	<u>n</u>	Loc Oty	Loc Code
339		25	
	121181	25	
ST337		50	
	122416	50	
ST339		15	
	120422	15	

August-27-12 10:25:58 AM

AN5-34A

Shop Packet Print

Page 5

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM	/ANCE / UP	DATE	QA Closed:	Date:	,
Morle Ord						DISPOSITION				AGAINST DE			
Work Order: Part No. NCR No.				Rework Skid-tube Crosstube Machining Small Fab Use-as-is Thermoforming Finishing Composite		Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		Engineering Quality Other					
Root					Descri	ption of work order update		nitial	Ac	tion	Sign &		
Cause		Date	Step	Qty	,	or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							A 111	T CATE	GORY				·
Landi	na G	Sear				General	AUL	LICATE	JORT				
Lanur		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspectio Ripples ir	Crimped. at n Strip in		O/S	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		4	ion Incomplete ions Incomplete/ enance eled	/Unclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	\vdash	Torque W		xtrusio	n	Drawing			Calibration				

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-27-12 10:25:58 AM

Work Order ID: 84488

Parent Item:

MS21042L5

D407-667-205

Parent Item Name: Crosstube Aft

84488 *D407-667-205*

Start Date: 14/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased	No	250	Each	1,596.000
				44

28 12/11/13

<u>Location</u>	Loc Qty	Loc Code	
300	488		
121652	488		
314	1000		
122452	1000		122452
ST300	. 108		•
108827	4		
116105	1		
116548	43		
119109	48		
2937	12		



											DQA:	Date	:	
NCR:	Yes	/ No				WORK ORDER NON-C	100	NFORM	AANCE / UPDA		QA Closed:	Date	·	
				;								····	•	
Work Orde	Work Order:				DISPOSITION				AGAINST DEI	PAKTIVIENT	PROCESS			
Part f	•					Rework Scrap Use-as-is		Therm	Machining noforming	Crosstube Small Fab Finishing		Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other	
NCR 1	۷o.					Work Order Update]		Large Fab (Composite	Supplier			
Root					Descri	ption of work order update		nitial	Action	1	Sign &			
Cause		Date	Step	Qty	C	or Non-conformance	Ch	ief Eng	Descript	ion	Date	Verification	QC Inspector	
Doc/Data														
Equip/Tooling														
Operator														
Material.							1							
Setup						·								
Other														
Process														
Supplier							Ì							
Training														
Unapproved							<u> </u>							
						F	AUL	T CATE	GORY			<u>, </u>		
Landi	ng (Gear				General		-			•	_	$\overline{}$	
		Bending				Bend		Grain			Ovalized		Pressure/Forced	
		Centre N	ot Conce	ntric to C)/S	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure	
		Cracks				Broken/Damaged	L	Inspect	ion Incomplete		Part Incorre	ct _	Weld	
		Crushed/	'Crimped			Burrs	L	Instruct	ions Incomplete/Unc	lear	Part Lost/M	issing	Wrong Stock Pulled	
		Cuffs				Contamination		Mainte	enance		Part Moved			
		Heat Trea	at			Countersink		Mislabe	eled		Positioned \	Vrong _		
		Inspectio	n Strip in	Tube		Cut Too Short		Misread	t		Power Loss,	'Surge	Other	
	Г	Ripples in	n Bend			Drill Holes	Г	Offset						

Out of Calibration
Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	84488
Description: Crosstube High Aft (407)	Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: F		Page 1 of 1

Acceptable

April 126

DAS

	Required Dimension		Min	Max	7	
	Height	2	3.39	23.65	1	
	1/2 Span	4	5.79	46.05	1	
•	Angle		54	56	1	
	Total Span	9	1.58	92.100		
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QC15 Inspection	DAO		_	
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Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	09.06.22	Dwg Rev updated	KJ	
С	11.08.22	Dimensions updated	KJ iA	
D	11.09.30	Dimensions updated	KJ 🗱	F

Dart Aerospace Ltd

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DATE	STEP	PRO	OCEDURE CHAN	IGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Part No	:	PAR #:	Fault Categ	ory:	NCR: Yes	No DQA	\:	_ Date: _	
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NOTE: Date & initial all entries

lte m	QTY -245	PART NUMBER	DESCRIPTION
1	х	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

D

- 1) MATERIAL: MANUFACTURED FROM D60 11-115 FINISHED LENGTH = 112.91±0.020
- CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- PAINT OUTSIDE PER DART QSI 005 4.2 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER 'D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 27.7 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
 RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03° TO 0.06° THICK LAYER OF MAGNOBOND 6399 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE
 - NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS.
- ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.

 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY **RETURN TO** ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER

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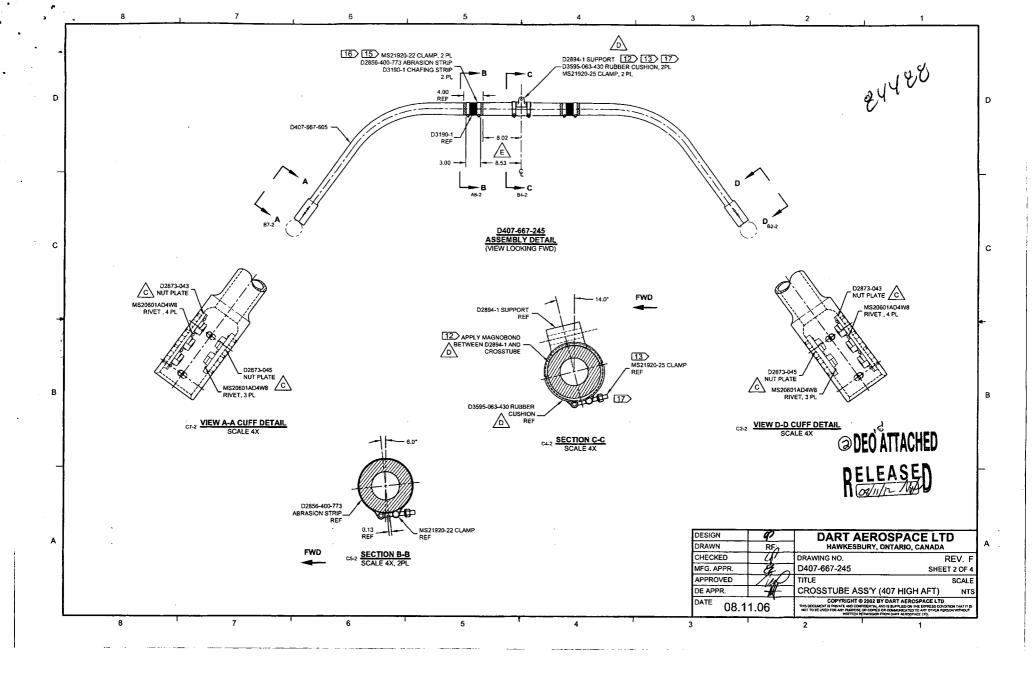
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REV.	DESCRIPTION	BY	DATE
Α_	NEW ISSUE		02.05.13
В	ADD CHAFING SHIELD		03.05.21
С	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES		05.07.26
D	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION		07.02.07
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5 REORGANIZED VIEWS AND REFORMATE TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWAR ELIMINATE INTERFERENCE WITH AIRCRA REFERENCE: PAR#60-21 AND ECN#1225	D CL TO MB	08.07.24
F	REFORMAT NOTES TO NEW STANDARDS (ZI RELOCATED FLAG # 6 (ZN A8-3) PER NCR 21: REMOVED REF. & ADD TOLERANCES (ZN C6 D2-3)	0;	08.11.06

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DE APPR.		CROSSTUBE ASSY (407 HIGH AFT)	NT			
DATE 08.1	1.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT OF PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONCIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONCIDENTIAL TO S				

Dart Aerospace Ltd

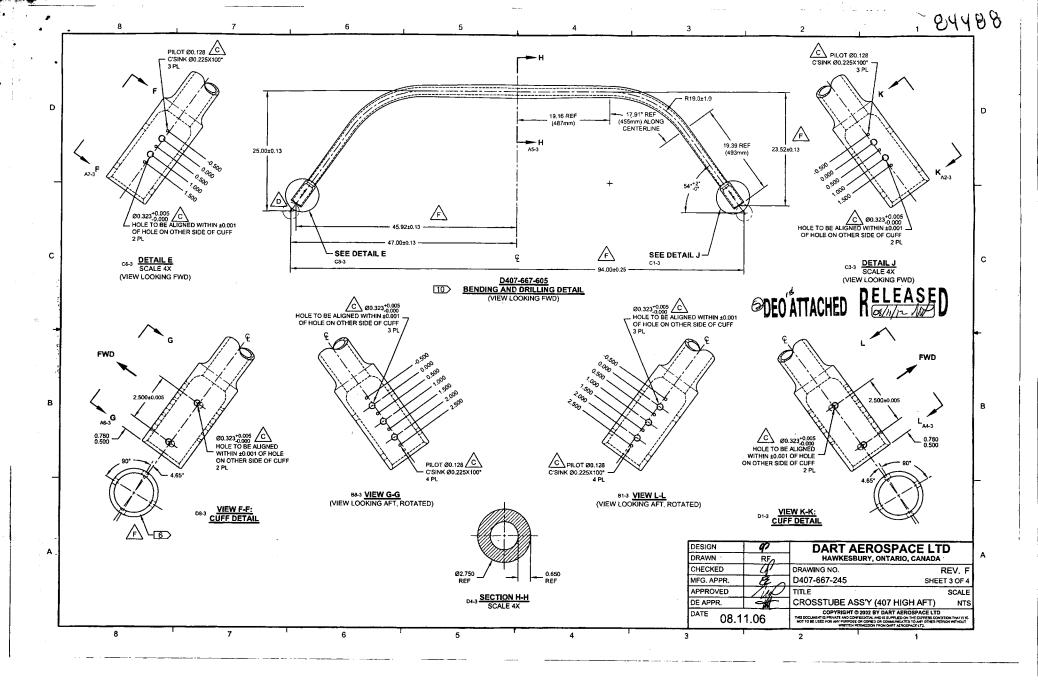
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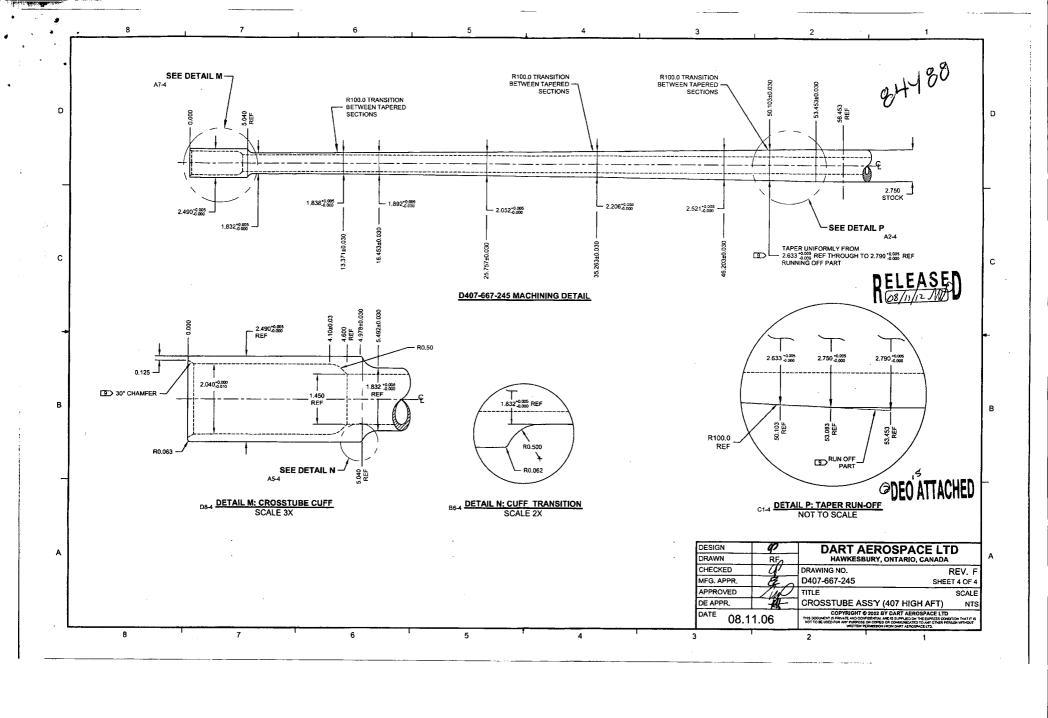
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DRAWING NO.	TITLE		REV. F	DART AE	ROSPACE LTD	D.E.O. N	O	SHEET NO.	SCALE
	CROSSTUBE	ASSY (407 HIGH	(AFT)	ENGINE	ERING ORDER	D407-6	67-245-F-1	SHEET 1 OF 2	NTS
DRAWN		CHECKED	9/	MFG. APPR.	E	APPROVED	150	DE APPR.	
DATE 11.04	.08 t	DATE 11.04	.12	DATE	11.04.12	DATE	11.04.12	DATE NOTI	2

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -245	Part Number	Description
3	0	D2856-400-773	ABRASION STRIP

WAS:

	C		
3	2	D2856-400-773	ABRASION STRIP

NOTES 2 AND 15, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND

PAINT OUTSIDE PER DART QSI 005 4.2

REMOVE MASKING AND APPLY CLEAR COAT

15) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3190-1 CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3190-1 CHAFING SHIELDS ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.

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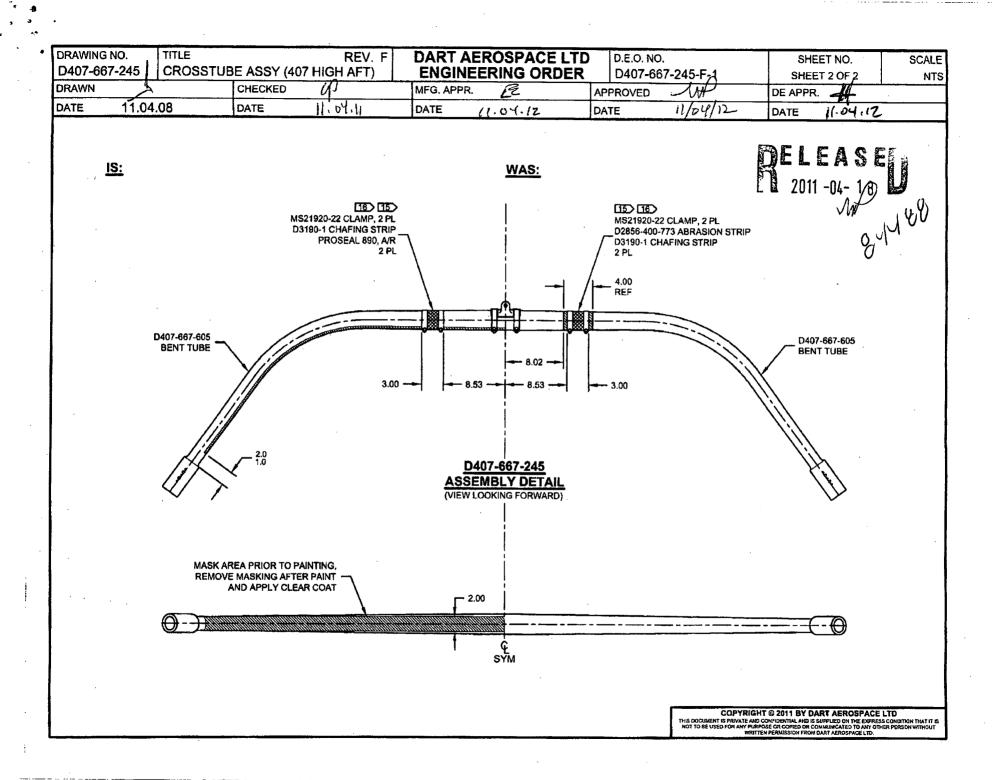


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Dart Aerospace Ltd	
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DRAWIN	NG NO.	TITLE		REV. F	DART AE	ROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D407-6	667-245	CROSSTUB	E ASS'Y (4	07 HIGH AFT)	ENGINE	ERING ORDER	D407-667-245-F-2	SHEET 1 OF	NTS
DRAWN	P		CHECKED	ASS	MFG. APPR.	E	APPROVED W	DE APPR.	***
DATE	11.09.	07	DATE	11.09.19	DATE	11-09-19	DATE 11.09.19	DATE 11.09.19	

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

044881

CHANGE:

18:

Item	Qty -245	Part Number	Description
12	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
			ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 17, SHEET 1 IS AMENDED AS FOLLOWS:

18:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

WAS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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W/O:		WORK ORDER	CHANGES			•
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

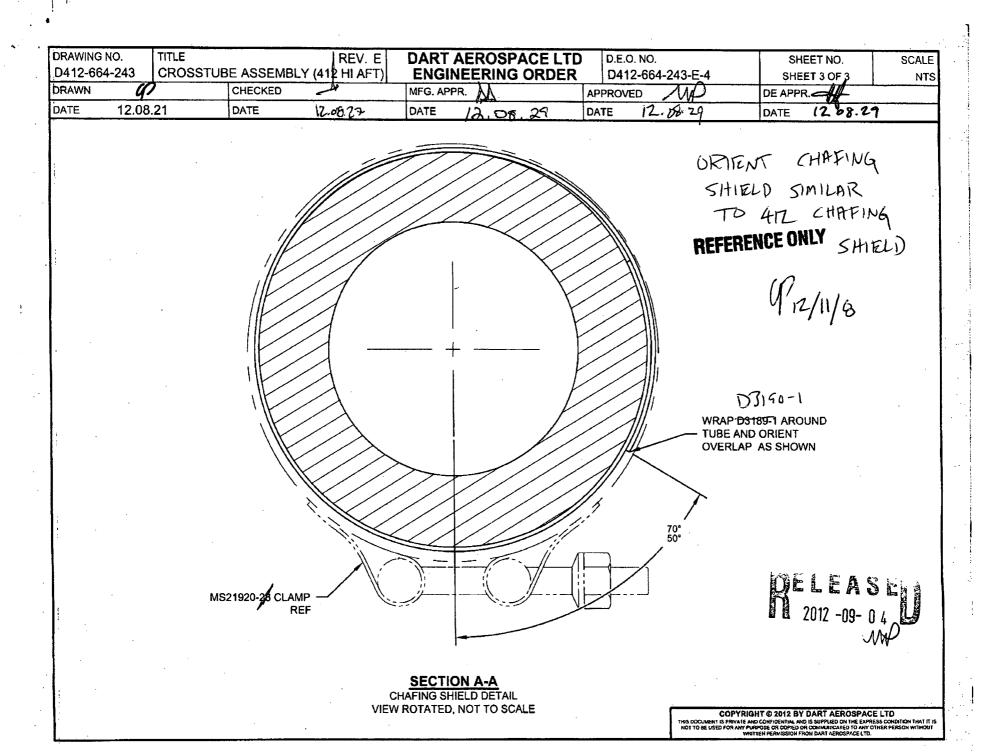
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LIQUID PENETRANT TEST REPORT

P- 12680

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TEST DETAILS		LODE OF LITE	Ch Mount 5		WATER WASH		SOLVENT REMOVAE	ar DP	OST EMULSIFIED
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PENETRANT	21-67	MINIMUM DWELL	TIME 45 10	Min.	LIGHTING EQUIP.	☐ FLASHLIGHT (TROUBLELIGHT [OUTPUT>10	
PENETRANT REM	OVER 100	MINIMUM DRY TIM		Min.	OTHER L	ABINO			
DEVELOPER	ShD 52	MINIMUM DWELL		Min.	LIGHT METER S/N	10889	60	CAL DUE DATE	
DEVELOPER TYPE		QUEOUS AQUEOU	JS 🔲 DR	RY	l				200
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Scope of Services The agreement of Acure	en Group Inc. to perform se	ervices extends only to those serv	vices provided for in w	riting. Und	er no circumstances shall su	ich services extend bey	yond the performance of the	requested services.	It is expressly understoo can they be construed a:
	A C-a.m Ina	ervices extends only to those serv f opinion reflect the opinions or c is not assuming any responsibil	lities of the ownerloner	ator ana Int	e owner/oberator retains con	mpiete responsioniny ju	or the engineering, managaci	ure, repair and use	decisions as a result of
data or other informati	on provided by Acuren Gro	oup Inc. In no event shall Acurer	n Group Inc.'s liability	ın respect o	i ine services rejerrea io neri	ет ехсева те аточт	paid for such services.		
	ces provided, Acuren Grou ended by Acuren Group Inc	p Inc. uses the degree, care and :	skill ordinarily exercise	ed under sin	nilar circumstances by other	rs perjorming such ser	vices in the same or similar	locatny. No other n	rarransy, expressed or
SIGNATURES		/ A							
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Change Record

Part Numbe	r D40	7-667	1-205	
Description	407	AFT	CROSS	TUBE

Page ___ of ___

Chg. Date By Relevant Documents ODI 62.06.04 PM PR- D206-667 Rev. E DOZ 03.05.21 DS PER DR-D206-667 Rev. F DO3 05.09.09 KT DR-D206-667 Rev. H (DEM COMPHICUS) DOY 07.02.14 PM DR-D206-667 Rev. L/MDL-D206-667 Rev. E DOS 07.11.07 PM DR-D206-667 Rev. F (D 2894 Rev. C)
002 03.05.21 DS PER M-D206-667 Nor-F 003 05.09:09 K5 DR-D206-667 Rev. H (2000 completions) 004 07.02.14 Af DR-D206-667 Rev. L/MOL-D206-667 Rev. E
003 05.09.09 KJ DR-D206-667 Rev. H (DEM COMPANISHE) OUL 07.02.14 A) DR-D206-667 Rev. L/MDL-D206-667 Rev. E
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